

Date: Fri, 12 Aug 94 04:30:16 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V94 #257
To: Ham-Ant

Ham-Ant Digest Fri, 12 Aug 94 Volume 94 : Issue 257

Today's Topics:

 Aluminum suppliers...
Bonehead: How do you tune an antenna with a noise bridge? (2 msgs)
 Ever see a black tribander?
 Galvanized wire at RF?
 Ham-Ant Digest V94 #256 -Reply
 How do I get aluminum tub (2 msgs)
 LOG-PE.ZIP
 Observations on the AR RF-1 Analyst.
 Okey-dokey
 Outbacker/portable
 Request for survey!!!
 SWR calculation needed... (2 msgs)
 The Best Antenna Software... (2 msgs)

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Wed, 10 Aug 1994 19:44:00 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!darkstar.UCSC.EDU!news.hal.COM!olivea!
charnel.ecst.csuchico.edu!nic-nac.CSU.net!usc!sdd.hp.com!hp-pcd!hpspkla!
depaul@network.ucsd.edu
Subject: Aluminum suppliers...
To: ham-ant@ucsd.edu

Hello folks.

Do you know of supplier names (and phone numbers) that supply 2-3" diameter aluminum tubing? I'm looking to make upwards of a 30' boom length.

Which brings me to my next question: How do you join aluminum booms together (properly)?

Thanks,

Marc DePaul

Date: Tue, 09 Aug 94 19:32:35 EDT
From: ihnp4.ucsd.edu!mvpb.saic.com!unogate!news.service.uci.edu!usc!
howland.reston.ans.net!swiss.ans.net!malgudi.oar.net!hypnos!voxbox!
jgrubs@network.ucsd.edu
Subject: Bonehead: How do you tune an antenna with a noise bridge?
To: ham-ant@ucsd.edu

jl198183@LANCE.ColoState.Edu (Jeffrey Allen LeBlanc) writes:

> So, is the "Tuner Tuner" from Palomar just a noise bridge? Thanks in advance
> for a reply.

Yes, the advantages are it is preset for 50-j0 and has a handy co-ax switch for taking it out of the line to the tuner. Most of the test instrument type bridges have to have the co-ax disconnected by hand.

--
jgrubs@voxbox.norden1.com
'Two of the gravest general dangers to survival are the desire for comfort and a passive outlook.' -- U.S. Army Ranger Handbook

Date: Tue, 09 Aug 94 19:29:09 EDT
From: ihnp4.ucsd.edu!mvpb.saic.com!unogate!news.service.uci.edu!usc!
howland.reston.ans.net!swiss.ans.net!malgudi.oar.net!hypnos!voxbox!
jgrubs@network.ucsd.edu
Subject: Bonehead: How do you tune an antenna with a noise bridge?
To: ham-ant@ucsd.edu

Tom Skelton <Tom.Skelton@ClemsonSC.NCR.COM> writes:

While this is true in theory, in practice there are a lot of things that cause variations in correct tuner settings. The most obvious is rainy weather.

'Two of the gravest general dangers to survival are the desire for comfort and a passive outlook.' -- U.S. Army Ranger Handbook

KL>I'm going to erect a temporary rhombic (440 feet/leg) on a cousin's farm
KL>for an upcoming contest operation. he's got miles of galvanized electric

KL>fence wire spooled and available. Does anyone have any data on the
KL>suitability of galvanized wire at 3.5 and 7 MHz? Failing that, does
KL>anyone have any lead on inexpensive *real* wire that can be tensioned to
KL>provide a 440 foot span with limited droop and stretch? All info
KL>welcomed. Thanks.

Galvanized steel will work OK at 3.5 and 7 MHz so long as the zinc
remains. Don't count on it for more than a few months, however, in a wet
or humid climate.

For a more permanent installation use Copperweld--a copper clad
steel wire.

--k2bt

≥ SLMR 2.1a ≥ Myth #1: The computer only does what you tell it.

Date: 11 Aug 94 14:14:56 GMT
From: news-mail-gateway@ucsd.edu
Subject: Ham-Ant Digest V94 #256 -Reply
To: ham-ant@ucsd.edu

I'm on vacation until August 22. I'll read your message and reply
when I return. If you need assistance with Emission Monitoring or
Stack Testing, please contact Jerry Keefe or Jack Harvanek. Thanks

Alan Hicks

Date: Wed, 10 Aug 94 23:35:00 -0500
From: iat.holonet.net!cencore!forrest.gehrke@uunet.uu.net
Subject: How do I get aluminum tub
To: ham-ant@ucsd.edu

RO>I have some sections of aluminum tubing from some old antenna
elements RO>that have become wedged together. I would like to get them
apart to use RO>them for some new antenna projects.

RO>Any suggestions how to separate a 12 ft of 1 3/8" .058 wall tubing with a
RO>long piece of 1 1/4" inside it sticking out a few feet? It won't budge.

This is always a tough proposition and I have had no little
share of experience with this problem.

First, try to get some WD-40 inside those sections. Set the piece on end and let this stuff run inside as best you can. Let the piece stand that way for an hour or so. If you can stand it up in the full sunlight to warm it up, that will help penetration.

The major problem now will be having means to twist one section from the other without deforming the sections. It would help if you had a wood bench vise to hold the larger diameter section while using a small chain wrench on the smaller section as a way to get some twisting action between the two sections. You may have to twist in both directions. Once you can get the section to turn then use a turning and pulling apart action simultaneously.

If you can get the sections to twist quite easily, see if you can simply pull the sections apart straight-away.

If you don't have a wood vise, use pieces of board between the jaws of your regular vise to get a good grip on the larger section without deforming the section.

You have to be very careful not to get too vigorous with this attempt as aluminum has an awful tendency to gall. Once this occurs you will have had it. Although you can try another session of WD-40 as a last resort.

---k2bt

≥ SLMR 2.1a ≥ SHIN - A device for finding furniture in the dark.

Date: 11 Aug 1994 10:20:09 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!usenet.ins.cwru.edu!news.ysu.edu!
malgudi.oar.net!infinet!wvanho@network.ucsd.edu
Subject: How do I get aluminum tub
To: ham-ant@ucsd.edu

Forrest Gehrke (forrest.gehrke@cencore.com) wrote:

: RO>I have some sections of aluminum tubing from some old antenna
: elements RO>that have become wedged together. I would like to get them
: apart to use RO>them for some new antenna projects.

: RO>Any suggestions how to separate a 12 ft of 1 3/8" .058 wall tubing with a
: RO>long piece of 1 1/4" inside it sticking out a few feet? It won't budge.

K2BT wrote lots of good advice, including:

: You have to be very careful not to get too vigorous with this
: attempt as aluminum has an awful tendency to gall. Once this
: occurs you will have had it. Although you can try another
: session of WD-40 as a last resort.

: ---k2bt
:

In addition, you will be able to get better purchase with a vise at one
end and vise-grips at the other if you insert a short piece of dowel in
the tubing to keep it from collapsing when you screw down the jaws with a
lot of pressure. The dowel does not have to be a very close fit.

It will still be touch-and-go whether the friction will release before
the tubing fails in torsion.

73, Van - W8UOF

* * * * *
* It ain't wot ya don't know 't gets ya into trouble. *
* It's wot ya know 't ain't true. - "Mr. Dooley" *
* * * * *

wvanho@infinet.com

Date: 11 Aug 94 21:25:51 GMT
From: news-mail-gateway@ucsd.edu
Subject: LOG-PE.ZIP
To: ham-ant@ucsd.edu

Hi All,

Wellllll, I did it again ;-(
I erased digest # 254.

Now would some kind sole PLEASE send me a copy of LOG-PE.ZIP that was
UUE'd as part of the digest (or just the encoded version, then I can
encoded it)

I just checked the archives on UCSD and this volume of the digest is not
there (for some unknown reason)

Thanks in advance
Lynn Geitgey KB0LRB
geitgey@ukanvm.cc.ukans.edu

Date: 11 Aug 94 21:47:25 GMT
From: news-mail-gateway@ucsd.edu
Subject: Observations on the AR RF-1 Analyst.
To: ham-ant@ucsd.edu

Here are some observations of using the new Autek Research RF-1 Analyst on a real world antenna problem.

The task at hand was to improve my receiving capabilities towards Europe and JA, long path. From New Jersey this is roughly 50 degrees and 150 degrees, respectively. I already had a 420' single wire beverage on JA and found it to be a very good receiving antenna.

My dilemma was that I could not run a beverage to the north east. I could tell you about my encounter with my disgruntled neighbor after my first incursion on her property, but lets just say she was not amused with my last antenna project. Three days before the CQWW SSB contest she discovered my Europe beverage. That antenna had a short life, it was only up for 3 days. Sometime afterward I discovered that someone cut 2 guy ropes holding up my 10M beam. Cause & effect? Suffice it to say, I can't run anything in the direction of Europe.

The solution appeared to be to build a switchable, 2 wire beverage. There are no obstacles in the opposite direction of Europe. So, it appeared that I found a possible solution to my Europe beverage problem.

The construction of the antenna required making two matching transformers per antenna. One transformer is a center-tapped, push-pull affair and the other is a simple, single-ended job. A two wire beverage operates in two modes 1) transmission line, (push-pull mode), for one direction and 2) push-push mode for the other direction.

The antenna is to be constructed like a parallel transmission line 560' of 20 guage "drop wire", 8' above ground (this is 1.1 "cowheights") and spaced 8" apart. The formulas tell me that the transmission line mode would present 745 ohms. I had to match the 50 ohm feed line to this impedance. The transformers were to be built around stacked, 0.5", MN-8CX ferrite cores, ($\mu=10,000$). Two cores were used and stacked and held in place with Duco cement.

The transformers were built and testing began by placing two 375 ohm resistors ($\sim 1/2$ 745 ohms) one on each side of the secondary to the center tap. The RF-1 was connected to the primary.

I was able to very quickly determine the SWR, impedance and bandwidth of the transformer I just built. Initially, I had wound 11 turns for the secondary and found the primary impedance to be about 72 ohms from 1.8Mhz - 10 Mhz. This presented an SWR of 1.5:1 at 50 ohms. Close, but not quite what was needed. I put those two transformers aside and wound another with 13 turns. Perfect! This one measured 50 ohms from 1.8 - 10Mhz +/- a few ohms, almost 1:1 across the entire frequency range, over 5 octaves!

The next test is to measure the balance of the center-tapped secondary. One technique is to feed a small amount of drive to the secondary with a receiver connected to the primary. You short the secondary wires together and feed the signal between them and the center tap. Theoretically, there should be no output at the primary. Realistically, there should be at least 40dB isolation. By disconnecting one of the secondary wires you should be able to produce an unbalanced condition. So, the RF-1 was used as a signal source, as well as a multi-function meter. The note is not a T9, but all things considered it's fairly stable after a few seconds "settling" time. The test showed the transformer had in excess of the expected 40 dB of isolation.

Try doing these things with a noise bridge. I have wound other 9:1 and 12:1 transformers with a noise bridge and it took a long time to perform the test functions to get the turns ratio "just right." The RF-1 allowed me to determine that the device presented a 1:1 match, that the impedance the rig would see is exactly 50 ohms AND the bandwidth of the device would satisfy my requirements, namely, operation on 160-40M. A frequency sweep can be done in a matter of seconds! Whereas, the typical noise-bridge/general coverage receiver combination could take a half-hour.

Also, my noise bridge can only measure up to 300 ohms, resistive. The RF-1 can measure up to 2k ohms, albeit with less accuracy. This would be satisfactory to check for resonances when building RF chokes for a typical amateur HF amplifier. With the noise bridge you would see a slight dip in Rx strength when you approached the self-resonant frequency of the choke. But, it really isn't as pronounced an indication as you would get using a grid dip meter. With the RF-1 you should see a pronounced dip in impedance when the self-resonant frequency is reached. This should replace the "put in circuit, throw switch, wait for explosion" method of testing I previously used.

The uses for this gizmo are numerous and it will become a permanent member of my antenna test kit. No more remote control

of the rig from 250' away from the antenna farm. No more mad dashes from shack to farm and back to collect data points before the sun goes down. The RF-1 fits nicely in my shirt pocket.

.....
73 de Walt Kornienko - K2WK Internet: waltk@pica.army.mil
DX PacketCluster: K2WK > W3MM (FRC) Packet: K2WK@N2ERH.NJ.USA.NOAM
I don't work for AR, never have, never will, hence all disclaimers apply.

Date: Wed, 10 Aug 1994 15:02:42 GMT
From: ihnp4.ucsd.edu!news.cerf.net!gopher.sdsc.edu!nic-nac.CSU.net!
charnel.ecst.csuchico.edu!yeshua.marcam.com!hookup!nic.ott.hookup.net!takeone!
jacques.choquette@network.ucsd.edu
Subject: Okey-dokey
To: ham-ant@ucsd.edu

Will do. My friend has been building them here. they are quite popular and cheap will LOTS of propagation range. Will put as a .txt. file and send your way.

Date: Thu, 11 Aug 94 02:05:27 -0500
From: news.delphi.com!usenet@uunet.uu.net
Subject: Outbacker/portable
To: ham-ant@ucsd.edu

JEFF M. GOLD <jmg@tntech.edu> writes:

>go hiking.. the question is what is the trick for ground radials..
>do you need to hang a bunch off some type of foldable antenna
>mounting stand.. or is there is some other way to handle the
>ground plane?

I've used two different methods - first is just some radial wires laid out along the ground. The second is a small roll of old aluminum window screen, connected to the antenna at the point where you would normally connect the radials. Both worked well just laid out on the ground.
Have fun -
73, Mike KB3RG

Date: 10 Aug 1994 09:51:40 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!

newsserver.jvnc.net!raffles.technet.sg!nuscc.nus.sg!eng20057@network.ucsd.edu
Subject: Request for survey!!!
To: ham-ant@ucsd.edu

Date: Thu, 11 Aug 94 09:59:00 -0500
From: iat.holonet.net!cencore!forrest.gehrke@uunet.uu.net
Subject: SWR calculation needed...
To: ham-ant@ucsd.edu

BR>Can somebody please tell me the formula for calculating SWR when given only
BR>the forward and reflected power in watts.

BR> i.e Bird Inline reads 15w forward and 6w reverse. SWR=?

If you can relate those power readings to voltages you can
get there. $(E_{fwd} + E_{ref}) / (E_{fwd} - E_{ref}) = SWR$

Perhaps your Bird Wattmeter manual shows the relationship
of power to voltage?

≥ SLMR 2.1a ≥ Despite the cost of living, it remains popular.

Date: 11 Aug 1994 21:50:56 GMT
From: tcsi.tcs.com!agate!kennish@uunet.uu.net
Subject: SWR calculation needed...
To: ham-ant@ucsd.edu

>BR>Can somebody please tell me the formula for calculating SWR when given only
>BR>the forward and reflected power in watts.

>BR> i.e Bird Inline reads 15w forward and 6w reverse. SWR=?

Let's see:

$$SWR = ((V_+) + (V_-)) / ((V_+) - (V_-)) = (1 + \rho) / (1 - \rho)$$

where V_+ and V_- are the magnitudes of the maximum and minimum voltages
in the standing wave envelope, and ρ is the absolute value of the
reflection coefficient.

$\rho = (Z_L - Z_0) / (Z_L + Z_0)$ where Z_L is the load impedance and Z_0 is the
line impedance

But, you want to know fwd/ref pwr vs. SWR. Well, since the power is related to the square of the voltage,

$\rho^2 = P_{\text{ref}}/P_{\text{forward}}$,

So, in your example: $P_{\text{for}} = 15\text{W}$, $P_{\text{ref}} = 6\text{W}$, $\rho^2 = 0.4$,
 ρ thus is 0.6325.

$\text{SWR} = (1+0.6325)/(1-0.6325) = 4.4415:1$ (pretty bad).

=ken

Date: Wed, 10 Aug 1994 19:39:00 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!darkstar.UCSC.EDU!news.hal.COM!olivea!channel.ecst.csuchico.edu!nic-nac.CSU.net!usc!sdd.hp.com!hp-pcd!hpspkla!depaul@network.ucsd.edu
Subject: The Best Antenna Software...
To: ham-ant@ucsd.edu

Hello Folks.

I've used Elnec and have gotten outlandish gain figures for wire antennas (yes, I've segmented the wires to death, and have used real grounds...).

Well, anyway...what is your favorite ant software, and why?

Much appreciated.

Marc DePaul

Date: 11 Aug 1994 17:10:09 GMT
From: news.tek.com!tekgp4.cse.tek.com!royle@uunet.uu.net
Subject: The Best Antenna Software...
To: ham-ant@ucsd.edu

"William P. Osborne" <wosborne@nmsu.edu>:

:On Wed, 10 Aug 1994 19:39:00 GMT,
:Marc DePaul <depaul@spk.hp.com> wrote:

:>
:>Hello Folks.
:>
:>I've used Elnec and have gotten outlandish gain figures
:>for wire antennas (yes, I've segmented the wires to death,
:>and have used real grounds...).
:>
:>
:>Well, anyway...what is your favorite ant software, and why?

:. . .Roy reads this newsgroup so if you have questions you might ask him;
:I have seen him answer several people in prompt and helpful manner.

As a practice, I don't answer ELNEC questions via the Internet, since my connection is provided by my employer. But the reason Mr. DePaul didn't ask is probably embarrassment. He didn't purchase the copy of ELNEC he used. This may bear on the issue of software piracy someone recently asked about. What do you think of the issue, Marc?

73,
Roy Lewallen, W7EL
roy.lewallen@tek.com

End of Ham-Ant Digest V94 #257
